

MIL-B-48024 (AR)
 AMENDMENT 5
 18 March 1991

 SUPERSEDING
 AMENDMENT 4
 14 July 1989

MILITARY SPECIFICATION

BOXES, AMMUNITION PACKING: WOOD,
 (W/PLYWOOD TOP AND BOTTOM) NAILED

This Amendment forms a part of Military Specification MIL-B-48024 (AR), dated 3 February 1972, and is approved for use by the U.S. Army Armament, Munitions and Chemical Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

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2. Applicable Documents

Specification, Federal:

Delete "TT-W-572 - Wood Preservative, Water Repellent"

Specification, Military

Delete "MIL-W-6110- Wood, Determination of Moisture Content"

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2.1 Drawings, Army

Add "8796523 - Hasp
 8796524 - Hinge

Add new paragraph as follows:

"2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

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AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM-D2016 - Moisture Content of Wood, Standard Test
Methods for

ASTM-D4268 - Testing Fiber Ropes, Standard Methods
for

(Application for copies should be addressed to the American
Society for Testing and Materials, 1916 Race Street,
Philadelphia, PA 19103.)"

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3.4 Rope handles. After the third sentence add: "This length
is the length of exposed rope. It does not include the
length of rope needed for attachment to the boxes (i.e.,
that length attached to the cleats). This adds
approximately six inches of rope."

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3.5 Metal fittings

After "9266797 - Hasp", add "(except Figure 5)"

After "9266798 - Hinge, Pinless (Tang and Receiver)",
add "(except Figure 5)"

After "MS51862 - Screw, Tapping"
.MS51862-24", add "(except Figure 5)"

Add "8796523 - Hasp (Figure 5)"

Add "8796524 - Hinge (Figure 5)"

Delete "Any box for which hardware is specified, shall
have one hasp pinless hinge regardless of box length" and
substitute "Any box for which hardware is specified, shall
have one hasp and one pinless hinge regardless of box
length. NOTE: Figure 5 will use hinge 8796524 in place of
the pinless hinge."

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3.7 Box identification, second sentence: Delete in its
entirety and substitute:

"The letters "PA" shall be annotated on all boxes
subjected to the PQ56 (Copper-8-quinolinolate) preservative
treatment in accordance with 3.12. The letters "PB" shall
be annotated on all boxes subjected to the M-GARD W550 (zinc

naphthenate emulsifiable) preservative treatment in accordance with 3.12. The letters "PC" shall be annotated on all boxes subjected to either the Cunapsol 5 (copper naphthenate) or the M-GARD W510 (copper naphthenate) preservative in accordance with 3.12."

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- * 3.12 Preservative treatment. Delete in its entirety and substitute:

3.12 Preservative treatment. Grade A or Grade B boxes, individual or palletized or the finished wood parts thereof, shall be completely immersed for a minimum of one minute in a solution of wood preservative:

a. PQ56 reduced with water down to 1.8 percent copper-8-quinolinolate as solution (see 6.8).

b. An emulsion of wood preservative M-GARD W550 (zinc naphthenate) reduced with water down to 3 percent zinc as metal (see 6.9).

c. An emulsion of M-GARD W510 (copper naphthenate) reduced down with water to 2 percent copper as metal (see 6.13).

d. A solution of Cunapsol 5 (copper naphthenate) reduced down with water to 2 percent copper as metal (see 6.14).

Alternatively, Grade A or Grade B boxes, individual or palletized or the finished wood parts thereof, shall be completely flooded for a minimum of one minute in PQ56, M-GARD W550, M-GARD W510 or Cunapsol 5 preservative. Care shall be exercised to assure complete coverage of all surfaces of the board. Immediately following the dip treatment, wood products being treated shall be drained for a period of not less than 5 minutes. If wood products are palletized, the pallet load shall be tipped on edge to facilitate thorough drainage. After the dip treatment, the boxes must be air dried for a period of 24 hours minimum providing thru ventilation thus allowing full air circulation around all surfaces of the wood box. Accelerated drying in an oven or kiln is permitted providing oven or kiln temperature does not exceed 160 degrees F. The boxes must be air dried to a maximum moisture content of 18% when tested in accordance with 4.4.2 prior to shipment.

The box manufacturer will be required to obtain and provide all available safety, health and environmental data; i.e., EPA Hazard Data Sheets, OSHA Safety Data Sheets, etc. Of specific interest are the acute, subchronic and chronic toxicity data. Also, the manufacturer will obtain and provide any special safety, health and environmental information (apparatus and procedures) to be used throughout the treated box duty life and disposal.

3.12.1 Presence of PQ56 (copper-8-quinolinolate) preservative. When treated with PQ56, the box shall show evidence of discoloration when tested as specified in 4.4.5.

3.12.2 Presence of M-GARD W550 (zinc naphthenate emulsifiable) preservative. When treated with M-GARD W550, the box shall show evidence of discoloration when treated as specified in 4.4.6.

3.12.3 Presence of M-GARD W510 (copper naphthenate) or Cunapsol 5 (copper naphthenate) preservative. When treated with M-GARD W510 or Cunapsol 5, the box shall show evidence of discoloration when treated as specified in 4.4.7."

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4.3.3.5 Freedom from solvent. and 4.3.3.5.1 Retest. Delete in their entirety and substitute:

"4.3.3.5 Presence of wood preservative. (see 3.12), Major defect. A sample of 15 boxes shall be selected at random, from each lot, for this test. Four individual boards of each box shall be subjected to the test specified in 4.4.5, 4.4.6, or 4.4.7, as applicable. If one or more boards fail to meet the applicable requirement, the box should be classed defective. Failure of any box to comply with the requirements shall be cause for rejection of the lot."

4.4.3.6 Presence of pentachlorophenol preservative. Delete in its entirety.

4.4.1 Load test of rope handle. Delete in its entirety and substitute the following paragraph:

"4.4.1 Load test of rope handle. The box shall be packed with any suitable material until its gross weight is twice as great as its gross weight when packed with the item for which it was intended (see 6.2). If the resulting weight of the packed box is 250 pounds (lbs.) or less, 4.4.1.1 shall be followed. If the resulting weight is greater than 250 lbs. and not greater than 500 pounds, 4.4.1.2 shall be followed.

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4.4.1.1 Rope handle load test (250 lbs. or less). The box shall be suspended freely for one minute, minimum, from each rope handle in turn. In the event that one or both handles fail the requirement, the box shall be classed defective.

4.4.1.2 Rope handle load test (from greater than 250 lbs. to 500 lbs. maximum). The box shall suspend freely, for one minute minimum, from both rope handles (at once). In the event that one or both handles fail the requirement, the box shall be classed defective."

4.4.2 Moisture content, second line: Delete "Specification MIL-W-6110" and substitute "ASTM-D2016".

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4.4.4 Rope breaking strength, first sentence: Delete "Method 4106 of Specification CCC-T-191" and substitute "ASTM-D4268".

4.4.5 Freedom from solvent. Delete in its entirety and substitute:

"4.4.5 Presence of PQ56 (copper-8-guinolinolate) preservative.

4.4.5.1 Primary method.

4.4.5.1.1 Materials and equipment. The materials and equipment required are as follows:

a. PQ Check (indicator): The formulation contains 10 parts by weight, of sodium diethyldithiocarbamate trihydrate (see 6.10) and 90 parts by weight of distilled water.

b. Dropper: An ordinary glass tube eyedropper may be used.

4.4.5.1.2 Test procedure. Two drops of PQ Check (indicator) shall be applied to the wood surface. An immediate dark brown coloration and the spreading of the drops shall indicate PQ56 treatment.

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4.4.5.2 Alternate method.

4.4.5.2.1 Materials and equipment. The material and equipment required are as follows:

a. Reagent. Dissolve 0.5 grams chrome azurol S concentrate (see 6.11) and 5.0 grams sodium acetate in 80 ml distilled water and then dilute further to 500 ml total with distilled water.

b. Sprayer. A common manual (fly) sprayer type applicator shall be used.

4.4.5.2.2 Test procedure. Spray solution over surface of dried wood. A deep blue color reveals the presence of copper (from the copper-8-quinolinolate)."

4.4.6 Presence of pentachlorophenol preservative. Delete in its entirety and substitute:

"4.4.6 Presence of M-GARD W550 (zinc naphthenate emulsifiable) preservative.

4.4.6.1 Materials and equipment. The materials and equipment required are as follows:

a. Reagent. Dissolve 0.1 grams of dithizone (diphenylthiocarbazone) (see 6.12) in 100 ml of either methyl ethyl ketone or 100 ml of chloroform. (Note: This solution may be stored for long periods of time).

b. Eye dropper. An ordinary glass tube eye dropper may be used.

4.4.6.2 Test procedure. Five drops of the solution shall be applied to the wood surface. The indicator will turn red when zinc (M-GARD W550) is present. The color green indicates that the preservative is not present. Both colors fade quickly in the presence of light."

Add new paragraph as follows:

"4.4.7 Presence of M-GARD W510 (copper naphthenate emulsifiable) or Cunapsol 5 (copper naphthenate) preservative.

4.4.7.1 Materials and equipment. The materials and equipment required are as follows:

a. Reagent. Dissolve 0.5 grams chrome azurol "S" concentrate (see 6.11) and 5.0 grams sodium acetate in 80 ml of distilled water and then dilute further to 500 ml total with distilled water.

b. Sprayer. A common manual (fly) sprayer type applicator shall be used.

4.4.7.2 Test procedur. Spray solution over surface of dried treated wood. A deep blue color reveals the presence of copper (from copper naphthenate).

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6.6 Delete in its entirety.

Add new paragraph as follows:

"6.8 PQ 56. PQ 56, for the 1.8 percent coper-8-quinolinolate solution, may be obtained from the Chapman Chemical Company, P.O. Box 9158, Memphis, TN 38019 or equivalent facility.

6.9 M-GARD W550. M-GARD W550 (zinc hydronap) for the 3 percent zinc as metal solution, may be obtained from Mooney Chemicals, Inc., 2301 Scranton Road, Cleveland, Ohio 44113-9988 or equivalent facility.

6.10 Sodium diethylthiocarbamate trihydrate. Sodium diethylthiocarbamate trihydrate may be obtained from J. T. Baker Chemcial Company, Phillipsburg, New Jersey 08865 or equivalent facility.

6.11 Chrome azurol "S". Chrome azurol "S" may be obtained from Eastman Chemical Company, Rochester, New York or equivalent facility.

6.12 Dithizone. Dithizone (diphenylthiocarbazone) may be obtained from J. T. Baker Chemical Company, Phillipsburg, New Jersey 08865 or equivalent facility.

6.13 M-GARD W510. M-GARD W510 (copper naphthenate), for 2 percent copper as metal, may be obtained from Mooney Chemcials Inc., 2301 Scranton Road, Cleveland, Ohio 44113-9988 or equivalent facility.

6.14 Cunapsol 5. Cunapsol 5 (copper naphthenate), for 2 percent copper as metal, may be obtained from Chapman Chemical Company, P.O. Box 9158, Memphis, TN 38019 or equivalent facility."

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20.3 Standards: Delete "Federal Test Method STD No. 151 Metals, Test Methods" and substitute "ASTM-E8-Tension Testing of Metallic Materials".

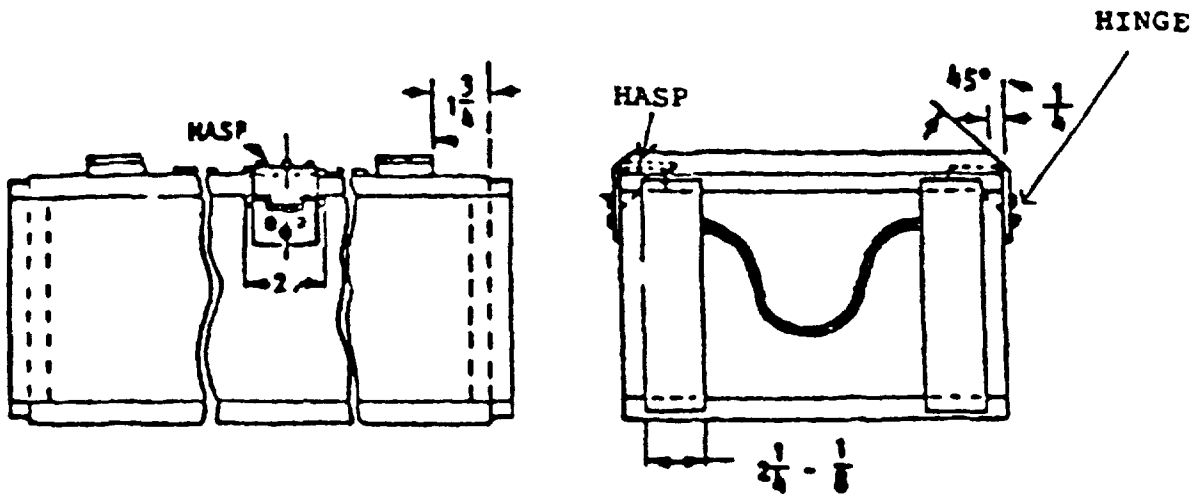
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40.1.3 Breaking strength test. first sentence: Delete "Method 211.1, Federal Test Method STD No. 151, Metals Test Methods" and substitute "ASTM-E8".

40.1.4 Percentage elongation test. first sentence: Delete "Method 211.1, Federal Test Method STD. No. 151, Metals Test Methods" and substitute "ASTM-E8".

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Figure 5. Delete in its entirety and substitute the included Figure 5.



NOTES:

- a. Center line of swivel located so that hasp passes tightly over swivel.
- b. See Figure 1 for construction of box.
- c. See Figure 1 for view of rope handle.
- d. See para. 3.5 for hardware requirements.
- e. Unless otherwise specified all sides, ends and end cleats shall be $11/16$ inch thick wood. The lid shall be $3/4$ inch 5 ply plywood. The bottom shall be $3/8$ inch plywood.
- f. See para. 3.4 for rope handle requirements. See Figure 1 for length of rope handle.
- g. Both hasp and hinge are located at center line of box.

FIGURE 5. Type II, Class 2 Box

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(Project 8140-A814)